

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings of claims in the application:

Listing of Claims:

1. (Cancelled)
2. (Currently Amended) The grinding device of claim ~~4~~ 38, wherein said superabrasive material of said grinding segment is diamond.
3. (Currently Amended) The grinding device of claim ~~4~~ 38, wherein said superabrasive material of said grinding segment is cubic boron nitride.
4. (Currently Amended) The grinding device of claim ~~4~~ 38, wherein said superabrasive material of said grinding segment is provided in an amount between 10% and 43.75% (by volume) of the total composition of the grinding segment.
5. (Original) The grinding device of claim 4, wherein said superabrasive material of said grinding segment is provided in an amount of 12% (by volume) of the total composition of the grinding segment.
6. (Currently Amended) The grinding device of claim ~~4~~ 38, wherein said refractory material of said grinding segment is boron carbide.
7. (Currently Amended) The grinding device of claim ~~4~~ 38, wherein said refractory material of said grinding segment is provided in an amount less than 10% (by volume) of the total composition of the grinding segment.

8. (Original) The grinding device of claim 7, wherein said refractory material of said grinding segment is provided in an amount of 2.2% of the total composition of the grinding segment.
9. (Currently Amended) The grinding device of claim ~~4~~ 38, wherein a grain size of the refractory material of said grinding segment is less than or equal to a grain size of superabrasive material.
10. (Currently Amended) The grinding device of claim ~~4~~ 38, wherein a grain size of the refractory material of said grinding segment is between 220 mesh and 1000 mesh.
11. (Cancelled)
12. (Currently Amended) The grinding device of claim ~~11~~ 38, wherein the melt-phase material of said grinding segment is bronze.
13. (Currently Amended) The grinding device of claim ~~4~~ 38, wherein the melt-phase material of said grinding segment is provided in an amount between 30% and 68% (by volume) of the total composition of the grinding segment.
14. (Original) The grinding device of claim 13, wherein the melt-phase material of said grinding segment is provided in an amount of 34.3% of the total composition of the grinding segment.
15. (Currently Amended) The grinding device of claim ~~4~~ 38, wherein the dry lubricant of said grinding segment is hexagonal boron nitride.
16. (Currently Amended) The grinding device of claim ~~4~~ 38, wherein the dry lubricant of said grinding segment is molybdenum disulphide.

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17. (Currently Amended) The grinding device of claim ~~1~~ 38, wherein the dry lubricant of said grinding segment is graphite.
18. (Currently Amended) The grinding device of claim ~~1~~ 38, wherein the dry lubricant of said grinding segment is coke.
19. (Currently Amended) The grinding device of claim ~~1~~ 38, wherein the dry lubricant of said grinding segment is a lithium state sterate.
20. (Currently Amended) The grinding device of claim ~~1~~ 38, wherein the dry lubricant of said grinding segment is provided in an amount at least 1% (by volume) of the total composition of the grinding segment.
21. (Original) The grinding device of claim 20, wherein the dry lubricant of said grinding segment is provided in an amount of 2.2% (by volume) of the total composition of the grinding segment.
22. (Currently Amended) The grinding device of claim ~~1~~ 38, wherein said resin bond material of said grinding segment is a polyimide resin.
23. (Currently Amended) The grinding device of claim ~~1~~ 38, wherein said dry lubricant of said matrix is molybdenum disulphide.
24. (Currently Amended) The grinding device of claim ~~1~~ 38, wherein said dry lubricant of said matrix is provided in an amount between 1% and 5% (by weight) of the total composition of the matrix.
25. (Original) The grinding device of claim 24, wherein said dry lubricant of said matrix is provided in an amount of 1.7% (by weight) of the total composition of the matrix.

26. (Currently Amended) The grinding device of claim ~~1~~ 38, wherein said porosity filler of said matrix is a ceramic material shaped into spheroids.
27. (Original) The grinding device of claim 26, wherein said porosity filler of said matrix is a 14/40 ceramic bubble material.
28. (Currently Amended) The grinding device of claim ~~1~~ 38, wherein said porosity filler of said matrix is provided in an amount between 3% and 15% (by weight) of the total composition of the matrix.
29. (Original) The grinding device of claim 28, wherein said porosity filler of said matrix is provided in an amount of 7% (by weight) of the total composition of the matrix.
30. (Currently Amended) The grinding device of claim ~~1~~ 38, wherein said refractory material of said matrix is aluminum oxide.
31. (Currently Amended) The grinding device of claim ~~1~~ 38, wherein said refractory material of said matrix is silicon carbide.
32. (Currently Amended) The grinding device of claim ~~1~~ 38, wherein said refractory material of said matrix is boron carbide.
- ~~32~~ 33. (Currently Amended) The grinding device of claim ~~1~~ 38, wherein said refractory material of said matrix is zirconium carbide.
- ~~33~~ 34. (Original) The grinding device of claim ~~1~~ 38, wherein said refractory material of said matrix is provided in an amount between 10% and 70% (by weight) of the total composition of the matrix.

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34 35. (Currently Amended) The grinding device of claim **33 34**, wherein said refractory material of said matrix is provided in an amount of 56.3% (by weight) of the total composition of the matrix.

35 36. (Currently Amended) The grinding device of claim **33 34**, wherein a grain size of the refractory material of the matrix is equal to or smaller than a grain size of the superabrasive material of the grinding segment.

36 37. (Currently Amended) The grinding device of claim **4 38**, wherein the epoxy resin is a two-part epoxy with reactive dilutant and anti-foam additives.

38. (New) A grinding device especially adapted to perform dry machining, the grinding device comprising:

a plurality of grinding segments and a matrix surrounding at least one of said plurality of grinding segments,

said at least one of said plurality of grinding segments comprising a resin bond material and a superabrasive material dispersed throughout the resin bond material,

said at least one grinding segment comprising a refractory non-grinding abrasive grain material, a heat-dissipative melt-phase metal material comprising a copper tin alloy to enhance heat dissipation through the grinding segments, and a dry lubricant material to inhibit the generation of heat due to friction; and

said matrix comprising an epoxy resin,

said matrix further comprising a dry lubricant to inhibit the generation of heat due to friction, a porosity filler, and a refractory non-grinding abrasive grain for the purpose

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of wear retardation, whereby the grinding device is adapted to perform dry machining operations without the use of more than a nominal quantity of coolant or other lubricant.